

## **EXHIBIT “C”**

HOME

ABOUT US

TaskMaster 2000 Plus  
SOFTWARE

TRAINING

MODAPTS

CURRICULUM VITAE

PARTIAL  
CLIENT LIST

CONTACT US

AN EXPERT'S ANALYSIS OF *DAUBERT*Dr. Michael D. Shinnick  
& Martha J. Lanphear

**Abstract:** The U. S. Supreme Court has set out a new standard for deciding the admissibility of expert testimony in Federal courts. The new standard applies to all expert witnesses in Federal courts and has also been adopted by many state courts. The trial judge acts as a "gatekeeper" screening expert evidence to ensure not only that it is relevant, but also reliable. To meet this standard, the expert must carefully assess each case individually, with appropriate testing to provide an objective basis upon which to base conclusions. The expert must also use a generally accepted methodology that is sound and valid. Then the expert will be able to present testimony that will meet the Federal standard of assisting the trier of fact to understand the evidence or to determine a fact in issue and will be able to withstand opposition motions to suppress.

**Key words:** Expert testimony; admissibility; objective basis; accepted methodology

The United States Supreme Court decision in the case of *Daubert v. Merrell Dow Pharmaceuticals*, 509 U.S. 579, 113 S.Ct. 2786 (1993) ushered in a new era for deciding the admissibility of expert testimony in Federal Courts. The prior standard, used for more than seventy years, was enunciated in *Frye v. U.S.*, 293 F.1013 (D.C.Cir. 1923). Under *Frye*, the expert evidence had to be "generally accepted" as valid by the relevant scientific community to be admissible. In *Daubert*, however, the Supreme Court stated that the *Frye* test had been superceded by the adoption of the Federal Rules of Evidence and should no longer be followed in Federal Courts. Rule 702 of the Federal Rules of Evidence states:

If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise."

Under *Daubert*, the trial judge screens expert evidence to ensure not only that it is relevant, but also reliable. Although *Daubert* specifically only applied to scientific experts, the Supreme Court has since held in the case of *Kumho Tire Co. v. Carmichael*, 19 S.Ct. 1167 (1999), that the *Daubert* factors for admissibility of expert testimony apply to all types of expert testimony.

When accessing the reliability of expert testimony, the *Daubert* court promulgated certain factors that may assist the trial judge to determine whether the methodology underlying the testimony is sound and valid. Such factors include whether the theory or technique can be and has been tested; whether the theory or technique has been subjected to peer review and publication; the known or potential rate of error; and whether the theory or technique is generally accepted. *Daubert* at 2796-7.

The *Daubert* factors are not necessarily nor exclusively applied to all experts. The Supreme Court has reiterated that the inquiry envisioned by Rule 702 is "a flexible one." *Daubert* at 2797. The *Daubert* court held that "the focus, of course, must be solely on principles of methodology, not on the conclusions that they generate."

District courts have wide latitude in determining which factors are helpful in accessing the reliability in a specific case. Indeed, the *Kumho* court held, "whether *Daubert's* specific factors are, or are not, reasonable measures of reliability in a particular case is a matter that the law grants the trial judge broad latitude to determine." *Kumho* at 1176. Although *Daubert* only applies to cases in Federal Courts, it has been and likely will continue to be expanded to the state courts across the country.

I have been involved in numerous cases involving railroad employees suffering from cumulative trauma injuries brought pursuant to the Federal Employers' Liability Act, (FELA) 45 U.S.C. Section 51. The case law is replete with FELA cases in which experts have been successfully challenged under *Daubert*. See *Dukes v. Illinois Central Railroad*, 934 F. Supp. 939 (1996) and *Zarecki v. National Railroad Passenger Corporation*, 914 F. Supp. 1566 (1996). To safeguard against exclusion at trial in such cases, it is important for

the expert to ensure that proper methodology is followed.

In response to *Daubert* and its progeny, experts in work injury management and applied ergonomics must base their opinions on sound, recognized methodology. The methodology must be applied to the facts in issue and assist the trier of fact to understand the evidence or determine a fact in issue.

When preparing an opinion regarding a potentially work related cumulative trauma disorder, a standard, accepted ergonomic methodology must be utilized consisting of:

1. Work site analysis.
2. Assessment of hazard reduction.
3. Assessment of medical surveillance.
4. Assessment of education and training.

Ergonomic authorities have recognized this methodology. The National Safety Council in its *Accident Prevention Manual for Business and Industry* (1987) used this methodology and it is adopted in OSHA's, *Safety and Health Program Management Guidelines* (1989).

1. Work site analysis: An ergonomic expert's analysis must almost always begin with a visit to the injured employee's work site. There may be occasions when a visit to the injured employee's work site is impractical. A detailed evaluation of the performance of the employee's work tasks and the tools/equipment utilized by the employee is paramount. I have visited numerous railway yards throughout the country and observed railroad workers performing their work tasks for the purpose of examining their exposure to the risk factors for cumulative trauma disorders. When I cannot visit the worksite personally, I will rely on the injured employee's statements of what his work duties were, pictures, charts and diagrams of the work site, videotapes of the work processes and inspection of those tools and equipment which can be furnished to me.

The tools and equipment used by the employee must be weighed and measured along with the force and postures needed to operate them. The quantification of such weights and forces helps assure reliability. Job analyses should also be consulted which may be available regarding the physical requirements of a particular job or task.

2. Assessment of hazard reduction: In addition to visiting and reviewing the work site or other work evaluation, an assessment must be made of the employer's efforts to reduce any ergonomic hazards identified in the workplace. In performing this step of the analysis, it is important that investigation be made into any engineering controls or administrative controls that have been put into place.

Engineering controls can include any new tools or methods of equipment operation. Administrative controls can include well-scheduled work breaks or the hiring of additional employees to assist in the work process.

3. Medical surveillance: The ergonomic expert must also investigate what the employer has done in terms of medical surveillance. Inquiry should be made concerning the regular periodic physicals undergone by employees to determine if there is any effort on the part of the employer to detect cumulative trauma injuries. This is especially true with workers who return to work after an absence for corrective surgery of a musculoskeletal cumulative trauma disorder.

4. Employee education and training: An integral part of any effective program to reduce cumulative trauma disorders is employee education and training. It has been my experience that the less education and training given to employees the greater the risk of musculoskeletal cumulative trauma injuries. Education and training can be helpful in the early detection of a cumulative trauma injury. An educated employee can alert an employer of potential ergonomic hazards that warrant correction.

While preparing an opinion in a work injury case, the employee should be interviewed and his medical and vocational records carefully examined. Depending on the issues in the case, testing may be administered. The tests provide work samples that reflect the employee's vocational assets and limitations. In addition, an APTICOM vocational aptitude battery and/or a wide range achievement test may be utilized to assess the

potential for retraining or further education. These tests provide an objective basis upon which vocational and employability conclusions can be drawn.

A review of pertinent literature can also be fruitful. The National Institute of Occupational Safety and Health (NIOSH) and the Occupational Safety and Health Administration (OSHA) have circulated several publications. The NIOSH publication entitled *Musculoskeletal Disorders in Workplace Factors, A Critical Review of Epidemiologic Evidence for Work-Related Musculoskeletal Disorders of the Neck, Upper Extremity, and Low Back* (July 1997) is a helpful review of the relevant peer review literature regarding the work relatedness of cumulative trauma disorders. It is worth noting that no study has established a minimum amount of force required to cause a cumulative trauma disorder, and under a *Daubert* analysis a court may not question the conclusions drawn from the study, only the methodology used in it. OSHA is another good source of published materials concerning cumulative trauma injuries. *Ergonomics: The Study of Work* (1991) is an informative booklet that was part of a national educational program to increase awareness and reduce work related musculoskeletal disorders. Other helpful literature includes publications by the Association of American Railroads (AAR) which is a national trade organization for the railroad industry. Such studies and documents include various ergonomic subjects evidencing the railroad's awareness of the hazards of cumulative trauma injuries. Examples of AAR publication are: *Basic Ergonomics: Principles and Techniques* (1992); *Ergonomics in Design: A Reference Manual* (1991); Ergonomics Workshop, *Low Back Pain and Manual Materials Handling* (1990); AAR Ergonomic Reviews, *Tie Plate Lifting, Handbrake Operations, Yardmen Activities, Hand Switch Operations, Adjusting Drawbars, Heavy Industrial Corporations*, (1987-1994).

Using a personalized method of assessment and the ergonomic methodology outlined above, testimony regarding exposure risk factors for musculoskeletal disorders and the vocational implications of a worker's limitations can generally withstand *Daubert* challenges. Carefully assessing each case individually, with appropriate testing to provide an objective basis upon which to base conclusions, in conjunction with an accepted methodology will result in reliable testimony that meets the *Daubert* test of assisting the trier of fact to understand the evidence or to determine a fact in issue.

#### About the Authors.

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As a former Auburn University Professor and in his current position as Director of Dynamics Research Group, Dr. Shinnick has provided consultation and directed projects in the United States, Canada, Australia, New Zealand, South America and Caribbean Basin in work assessment, disability management, ergonomics, job analysis and industrial performance standards. He has provided services to companies and organizations such as: General Motors; Ford Motor Company; Abbot Laboratories; Boeing Aircraft; Roadway Express; Presidents Committee on Employment of Persons with Disability, and Rehabilitation Organizations; etc. He is board certified in forensic ergonomics, work measurement, vocational evaluation, disability analysis and work adjustment. He has published more than fifty text chapters, journal articles, and training manuals, including the CD Rom. version of TaskMaster 2000, an ergonomics-based work measurement system.

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[BACK TO THE TOP](#)

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